

ITS Field Operational Test Summary

Tranzit *XPress*

FHWA Contact: Office of Motor Carrier Safety and Technology, ITS CVO Division, (202) 366-0950

Introduction

The Tranzit *XPress* ITS Field Operational Test evaluated a method of enhancing the response to hazardous materials incidents. Tranzit *XPress* is a system of computer hardware and software designed for use by public agencies and private transport firms involved in Hazardous Materials (HazMat) transportation. The project employed advanced monitoring and identification technologies and computerized emergency response information to facilitate and improve the response to hazardous materials incidents by emergency units.

The main objectives of Tranzit *XPress* were to:

- Demonstrate the ability to quickly identify the specific contents of a commercial motor vehicle involved in an incident while transporting hazardous materials
- Demonstrate the ability to link systems that identify, store, and allow retrieval of data for emergency response to HazMat incidents
- Evaluate the system's effectiveness at meeting the test objectives.

The Test took place from April 1996 to January 1997 in northeastern Pennsylvania (Scranton area).

Project Description

In this Test, the Tranzit *XPress* system provided a user-friendly, computerized information system to collect and make available accurate and timely information about HazMat shipments. This information would enable participating carriers and emergency responders to act more effectively and efficiently in case of an incident.

The test was limited in scope to the development and demonstration of a prototype system. The test mounted the system components in several trucks to use in perfecting the system. The test also presented "desktop" demonstrations of system operations at a motor carrier safety conference and a meeting of emergency response personnel. Test personnel then analyzed the responses of the demonstration participants.

The system had three separate components: the Information Dispatching/Operations Center, the On-Vehicle Electronics System, and Off-Vehicle Devices. Figure 1 presents a schematic of the Tranzit *XPress* system components.

The Information Dispatching/Operations Center collected HazMat information from the shipper and transmitted the information appropriately in the system. One of the Center's computer applications communicated with the transporting vehicle via cellular modem to transfer shipping orders and to maintain status information. Another application allowed the operator to maintain and update shipping information. A map visualization product displayed the location of vehicles.

A relational database stored customer, bill of lading, and material data.

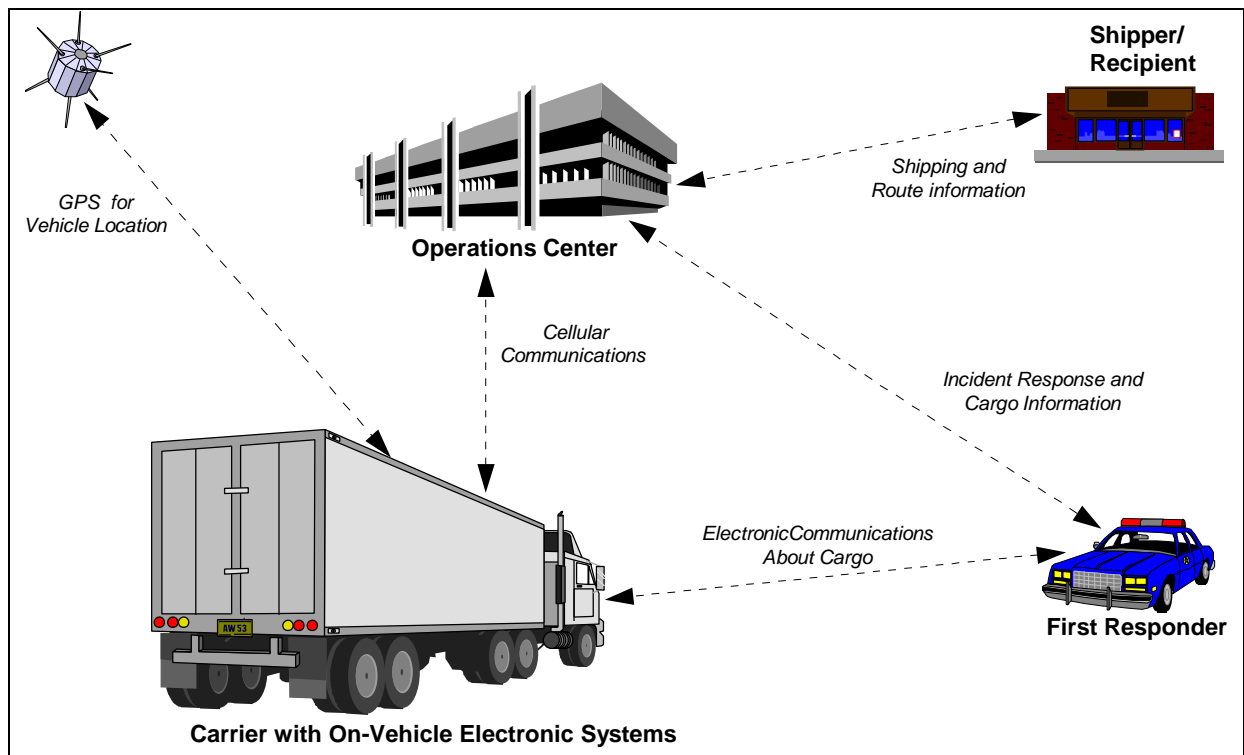


Figure 1: Schematic of Tranzit XPress System

The On-Vehicle Electronics system had two subsystems, one in the cab (tractor) and the other in the cargo box (trailer). The tractor electronics included a hand-held personal computer for the driver's use and a Global Positioning System (GPS). Tractor electronics also included an external communications systems (cellular), an internal communications system (within the cargo box), and the necessary connections between all components. The trailer electronics consisted of wireless communications devices and electronic asset tags attached to the material in transit.

In case of an incident, the Tranzit XPress system allows the driver or emergency response personnel to report the situation and obtain information about the cargo. In a non-emergency situation (for example, a leak is discovered while in transit), the driver could notify the shipping company or 911 and emergency personnel could respond appropriately to assess the situation. The emergency response personnel could electronically obtain information about the cargo to help determine the appropriate response. If the vehicle was involved in an accident, emergency dispatchers could begin notifying appropriate emergency response personnel based on knowledge of the cargo. When emergency personnel arrived at the scene, they could use electronic communications to directly obtain information about the cargo from the electronic systems on the vehicle.

Test evaluators attempted to assess three areas: system impacts and performance, user acceptance, and system deployability. The evaluators used several means to collect information on which to base their conclusions, including historical data research, surveys, and interviews of test participants.

Results

Evaluators compared the perceptions of both “Incident Responders” and Motor Carriers regarding the time required for important actions in the response to a HazMat incident. Both classes of participants perceived that the use of the Tranzit *XPress* system would result in taking less time to mitigate a HazMat incident than under the current system.

Evaluators also accumulated general perceptions from both user groups about the Tranzit *XPress* system. Incident Responders considered the system better than the existing system. These responders indicated they would use the Tranzit *XPress* system if it were implemented. Motor carrier users also perceived the system as being better than the current system. At this time, however, the system was not sufficiently beneficial or robust to cause them to begin using it.

The evaluators cautioned that the application of the observed results is limited. Some limitations stem from the focus of the test, which was to present a demonstration of the system. The results are also restricted by the small sample size of participants from the motor carrier and emergency responder communities. The process of selecting participants resulted in a sample that was not necessarily representative of the general population. Based on the project’s focus on HazMat, however, the participants selected were appropriate.

Legacy

Test participants transferred the concepts, hardware, and software developed during the Tranzit *XPress* Phase I Test to a different location after completion of the test in Pennsylvania. In this new location (Long Beach, California) test partners are further developing and testing the components as part of the Tranzit *XPress* II Field Operational Test. This second test continues to use the NIER operations center in Mayfield, PA. Phase II, however, focuses on the international movement of HazMat in and around a port facility.

Test Partners

Federal Highway Administration

Pennsylvania Department Of Transportation

NIER (National Institute for Environmental Renewal)

PAR Government Systems Corporation

References

Goulias, K. and Alam, S., Tranzit *XPress*: Hazardous Materials Fleet Management and Monitoring System, Evaluation Report, July 1997